

UTILITY PATENT APPLICATION TRANSMITTAL

(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
91436-123C

Total Pages in this Submission

57

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

INTERNET-BASED TELEPHONE CALL MANAGER

and invented by:

Charles MEUBUS, Sylvain JODOIN, and Alan BERNARDI

If a **CONTINUATION APPLICATION**, check appropriate box and supply the requisite information:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 08/911,036

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.:

Which is a:

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Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 20 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications (if applicable)
 - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
 - d. ☐ Reference to Microfiche Appendix (if applicable)
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings (if drawings filed)
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

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Application Elements (Continued)

3. ☒ Drawing(s) *(when necessary as prescribed by 35 USC 113)*
- a. ☒ Formal Number of Sheets 8
- b. ☐ Informal Number of Sheets _____
4. ☒ Oath or Declaration
- a. ☐ Newly executed *(original or copy)* ☐ Unexecuted
- b. ☒ Copy from a prior application (37 CFR 1.63(d)) *(for continuation/divisional application only)*
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(usable if Box 4b is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under
Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby
incorporated by reference therein.
6. ☐ Computer Program in Microfiche *(Appendix)*
7. ☐ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all must be included)*
- a. ☐ Paper Copy
- b. ☐ Computer Readable Copy *(identical to computer copy)*
- c. ☐ Statement Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

8. ☐ Assignment Papers *(cover sheet & document(s))*
9. ☐ 37 CFR 3.73(B) Statement *(when there is an assignee)*
10. ☐ English Translation Document *(if applicable)*
11. ☒ Information Disclosure Statement/PTO-1449 ☐ Copies of IDS Citations
12. ☒ Preliminary Amendment
13. ☒ Acknowledgment postcard
14. ☐ Certificate of Mailing
- ☐ First Class ☐ Express Mail *(Specify Label No.):* _____

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Accompanying Application Parts (Continued)

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)

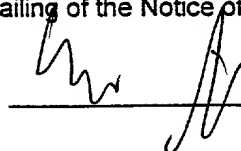
16. ☐ Additional Enclosures (please identify below):

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	35	- 20 =	5	x \$18	\$270.00
Indep. Claims	7	- 3 =	4	x \$78	\$312.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$760.00
OTHER FEE (specify purpose) _____					\$0.00
TOTAL FILING FEE					\$1,342.00

- ☒ A check in the amount of \$1,342.00 to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. 19-2548 as described below. A duplicate copy of this sheet is enclosed.
- ☐ Charge the amount of _____ as filing fee.
- ☒ Credit any overpayment.
- ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).



Signature

Dated: September 21, 1999

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cc:

Tel: (416) 593-5514

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of)
Meubus, Charles et al.) Group Art Unit:
Serial No.:) Examiner: Unknown
Filed:) Attorney's Docket: 91436-123C
For: INTERNET-BASED)
TELEPHONE CALL MANAGER)

PRELIMINARY AMENDMENT

Commissioner of Patents and Trademarks
Washington, D.C. 20231
U. S. A.

Dear Sir:

Please amend the above application as follows:

IN THE SPECIFICATION:

On page 1, line 3, insert --Cross Reference to Related Applications--.

On page 1, line 4, insert --This is a continuation application of U.S Patent
Application No. 08/911,036. --.

IN THE CLAIMS

Cancel Claims 1-20 in favor of new Claims 21-55 set out below:

21.(new) In a switched telephone network, comprising:

a plurality of telephony switches interconnected in a switched traffic
carrying network for carrying telephone call traffic and an associated

signaling network for carrying signaling information relevant to the establishment of call paths on said traffic carrying network;

a method of processing an incoming call directed to a specified subscriber telephone line on said traffic carrying network, said specified subscriber telephone line initially in-use to connect a data terminal to a data network, said method comprising:

- a. receiving a signaling message from said signaling network generated in response to said incoming call, said received signaling message received prior to establishment of a call path for said incoming call on said traffic carrying network;
- b. in response to said received signaling message, dispatching a first data message indicative of said incoming call to said data terminal on said data network by way of said traffic carrying network and said specified subscriber telephone line.

22.(new) The method of claim 21, further comprising:

- c. receiving a second data message from said data terminal, said second data message indicative of a call disposition response provided to said data terminal.

23.(new) The method of claim 22, further comprising:

- d. in response to receiving said second data message, dispatching a signaling message on said signaling network to establish a call path between said incoming call and said specified subscriber telephone line on said traffic carrying network.

24.(new) The method of claim 21, wherein said signaling network comprises an intelligent network, and wherein said received signaling message is received from a processing element forming part of said signaling network.

25.(new) The method of claim 22, wherein said received signaling message comprises a telephone dial number identifying said specified subscriber telephone line.

26.(new) The method of claim 25, wherein said received signaling message comprises at least one of a dial number associated with an originator of said incoming call and a name associated with an originator of said incoming call.

27.(new) The method of claim 21, wherein said data network comprises an internet protocol compliant network, and wherein said first data message comprises a internet protocol compliant message.

28.(new) The method of claim 26, wherein said first data message comprises at least one of a dial number associated with an originator of said incoming call and a name associated with an originator of said incoming call.

29.(new) A notification server comprising:

a first interface for connection of said server to a telephony signaling network, said signaling network for carrying signaling information relevant to the establishment of call paths on a switched traffic carrying telephony network, said first interface adapted to receive signaling messages prior to establishment of associated call paths on said traffic carrying telephony network;

a second interface for connection of said server to a data network;

a processor operable to

- a. receive a signal indicative of an incoming call originating with a caller to a specified telephone line on said traffic carrying telephony network, by way of said signaling network;
- b. in response to receiving said signal, dispatch a data message indicative of said incoming call to a terminal in communication with said data network, by way of said specified telephone line.

30.(new) The notification server of claim 29, wherein said processor is further operable to receive a call disposition response message from said data terminal by way of said data network.

31.(new) The notification server of claim 30, wherein said processor is further operable to dispatch a signaling message to said signaling network to establish a path on said traffic carrying telephony network between said caller and said specified subscriber line, in response to receiving said call disposition response message.

32.(new) The notification server of claim 29, wherein said signaling network comprises an advanced intelligent network (AIN) and said first interface comprises an interface to said AIN.

33.(new) The notification server of claim 29, wherein said data message comprises an internet protocol compliant message.

34.(new) The notification server of claim 30, wherein said processor is further operable to dispatch a signaling message to said signaling network to establish a call path between said caller and a voice mail server, in response to receiving said call disposition response message.

35.(new) The notification server of claim 30, wherein said processor is further operable to dispatch a signaling message to said signaling network to establish a call

path between said caller and a second subscriber telephone line, on said traffic carrying network, in response to receiving an appropriate call disposition signal.

36.(new) A service control point (SCP) for use in an advanced intelligent network (AIN) forming part of a switched telephone network, said SCP configured to dispatch a signaling message to a data network gateway interconnected to a data network, in response to receiving an AIN signal indicative of an incoming call to a specified telephone subscriber line in-use to connect a data terminal to said data network.

37.(new) A switching point, within a telephony signaling network, said signaling network for carrying signaling information relevant to the establishment of call paths on a traffic carrying telephony network, said switching point operable to dispatch a signal on said signaling network in response to an incoming call directed to a specified subscriber telephone line in use to connect a data terminal to a data network using said traffic carrying telephony network, said signal dispatched prior to establishing a path for said incoming call on said traffic carrying network.

38.(new) The switching point of claim 37, wherein said signaling network comprises an advanced intelligent network (AIN), and wherein said signal comprises an AIN termination attempt message.

39.(new) The switching point of claim 38, wherein said switching point is operable to generate said signal in response to an AIN termination attempt trigger generated at said switching point.

40.(new) A processing element for interconnection with a communications signaling network carrying signals relevant to establishing call paths on a traffic carrying telephone network, said processing element comprising:

a first interface for connecting said processing element with said signaling network in communication with a switch on said traffic carrying telephone network;

a second interface for connecting said processing element with a data network gateway for dispatching data messages on a data network; said processing element operable to dispatch a first message to said data network gateway by way of said second interface in response to receiving a signal by way of said first interface, said signal indicative of an incoming call to a specified telephone subscriber line in-use connecting a data terminal to said data network by way of said traffic carrying telephone network.

41.(new) The processing element of claim 40, further operable to

dispatch a signaling message on said first interface to establish a call path between said incoming call and said specified telephone subscriber line, in response to receiving an appropriate call disposition signal from said data network gateway on said second interface.

42.(new) The processing element of claim 40, further operable to

dispatch a signaling message on said first interface to establish a call path between said incoming call and a second subscriber telephone line, on said traffic carrying telephone network in response to receiving an appropriate call disposition signal from said data network gateway on said second interface.

43.(new) The processing element of claim 40, further operable to

dispatch a signaling message on said first interface to establish a call path between said incoming call and a voice mail system, on said traffic carrying network in response to receiving an appropriate call disposition signal from said data network gateway on said second interface.

44.(new) The processing element of claim 40, wherein said first interface comprises an advanced intelligent network (AIN) interface, and wherein said signal comprises an AIN signal.

45.(new) The processing element of claim 44, wherein said signal comprises an AIN call termination attempt message.

46.(new) The processing element of claim 45, wherein said AIN call termination attempt message comprises a telephone dial number identifying said subscriber line.

47.(new) The processing element of claim 46, wherein said AIN call termination attempt message comprises an identifier of an originator of said call, including at least one of a name and dial number associated with said call.

48.(new) The processing element of claim 47, wherein said first message comprises at least one of said name and said dial number.

49.(new) The processing element of claim 40, wherein said processing element is further operable to monitor a voice mail server associated with said specified subscriber telephone line, by way of said signaling network, and to provide a signal to said data network gateway indicative of a message waiting for said specified subscriber telephone line, at said voice mail server.

50.(new) In a switched telephone network comprising:

a first switch;

a first signal switching point associated with said first switch;

a second switch;

a second signal switching point associated with said second switch;

a processing element in communication with said second signal switching point;

said first signal switching point, said second signal switching point and said processing element interconnecting in a telephony signaling network;

a method of dispatching a message indicative of an incoming call, originating with a caller interconnected with said first switch to a subscriber line interconnected with said second switch, to a terminal in communication with a data network, said method comprising:

- a. dispatching a first signaling message from said first signaling point to said second signaling point;
- b. in response to said first signaling message, dispatching a second signaling message from said second signaling point to said processing element;
- c. in response to said second signaling message, dispatching a third signaling message from said processing element to said data network gateway;
- d. in response to said third signaling message, dispatching a data message from said network gateway over said data network to said data terminal.

51.(new) The method of claim 50, wherein said signaling network comprises an intelligent network, and wherein said second signaling message comprises a termination attempt message.

52.(new) The method of claim 51, wherein said second signaling message is dispatched prior to establishing a call path to said second switch for said incoming call.

53.(new) The method of claim 52, wherein said second signaling comprises a telephone dial number identifying said subscriber line.

54.(new) The method of claim 50, wherein said signaling network comprises an advanced intelligent network (AIN), and said first and second switching points each comprise an AIN service switching point (SSP).

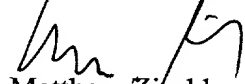
55.(new) The method of claim 54, wherein said processing element comprises an AIN service control point (SCP).

REMARKS

New Claims 21 to 55 are presented for consideration by the Examiner.

No new matter has been added by way of these amendments. Favorable consideration of the application is earnestly solicited.

Respectfully submitted



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91436-123C (MZ:smw)

INTERNET-BASED TELEPHONE CALL MANAGER

Field Of The Invention

5 The present invention relates to handling
telephone related messages during data communications
sessions.

Background To The Invention

10 As a result of the increasing popularity of the
Internet and the World Wide Web, more and more users stay
connected to their Internet service provider, mainly
through dial-up modem connections, for durations well
exceeding the average holding time for voice calls (3
15 minutes). During these calls, the call waiting indicator
is usually disabled since the tone generated by this
feature would disrupt the data stream. Since the Internet
session in most cases occupies the only telephone line in
the house, the subscriber is neither able to detect nor
20 respond to a call attempt.

Summary Of The Invention

It is an object of the present invention to
provide improved telephone call handling during data
25 communication sessions.

According to one aspect of the present invention
there is provided a method of providing an indication of an
incoming call to a called station coupled to a
telecommunications network, the called station having a
30 data processing terminal engaged in a data call with a data
communications network, the data call being through a
connection in the telecommunications network to an access
gateway for the data network, the method comprising the
steps of providing a signal advising of the incoming call
35 from the access gateway, over the data call connection
through the telecommunications network, to the data
processing terminal and generating by the data processing

terminal, responsive to receiving the signal, an incoming call indication.

According to another aspect of the present invention there is provided a method of providing an indication of a message waiting at a voice messaging service to a called station coupled to a telecommunications network, the called station having a data processing terminal engaged in a data call with a data communications network, the data call being through a connection in the telecommunications network to an access gateway for the data network, the method comprising the steps of providing, by the telecommunications network, an incoming call intended for the called station to a voice messaging service whereby the incoming call may record a message, providing a signal advising of the message waiting from the access gateway, over the data call connection through the telecommunications network, to the data processing terminal and generating by the data processing terminal, responsive to receipt of the signal, the message waiting indication.

According to a further aspect of the present invention there is provided a method of disposing of an incoming call intended for a called station coupled to a telecommunications network, the called station having a data processing terminal engaged in a data call with a data communications network, the data call being through a connection in the telecommunications network to an access gateway for the data network, the method comprising the steps of holding call processing of the incoming call at a switching system in the telecommunications network, providing a signal advising of the incoming call from the access gateway, over the data call connection through the telecommunications network, to the data processing terminal, receiving from the data processing terminal, via the access gateway, instructions for disposing of the incoming call and continuing the call processing of the incoming call at the switching system according to the received instructions.

According to an additional aspect of the present invention there is provided a system for interconnecting a telecommunications network and a data communications network, comprising a telecommunications gateway and a data network gateway adapted to interface the telecommunications network and the data network, one or more stations coupled to the telecommunications network, each station having a data terminal and a telephone terminal, means for recognizing, responsive to an incoming call being directed to a particular station, that the data terminal of the particular station has a data call connection through the telecommunications network to the data network and means for signalling information relating to the incoming call from the telecommunications network, via the telecommunications and data network gateways, over the data call connection to the data terminal of the particular calling station.

According to a still further aspect of the present invention there is provided a method of managing telephone service to a called station coupled to a telecommunications network while the called station is engaged in a data call, the method comprising the steps of providing a message indicative of an incoming call to the called station via the data call, accepting a message from the called station via the data call and disposing of the incoming call in response to the accepted message.

The present invention has the advantage of allowing a subscriber to monitor and control telephone services while engaged in a data call, via the data call.

The basic concept behind the present invention is to combine the Public Switched Telephone Network (PSTN) and the Internet service providers' enhanced signalling and data communication capabilities to provide incoming call information and control to an Internet subscriber. With the Internet Call Manager, the subscriber is informed of call attempts and can dispose of the call as deemed appropriate. Furthermore, subscribers connected by modem

cannot check if they have pending messages without terminating their session. The visual message waiting indicator allows them to be informed of their mailbox status within their Internet session.

5

Terminology and acronyms

- Caller

Person that calls the subscriber. The caller can reach the subscriber in two ways, either directly, i.e., the caller dials the subscriber's DN, or indirectly, i.e., the caller dials a DN that is forwarded to the subscriber's DN.

10

- Data Access Service Provider (DASP)

Data network operator that sells access services to its data network that allows the subscribers to communicate through the DASP's network and other data networks.

15

- DASP user

Person that subscribes to and uses DASP services.

- Forwarding from station number (FF)

Parameter conveyed over the control between the PSTN and the VMS system and used by the VMS system as the mailbox identifier.

20

- Subscriber

A DASP user that subscribes also to the Call Manager service.

25

- VMS subscriber

Person that subscribes to a VMS.

Acronyms

30

- BRI - Basic Rate Interface
- CPE - Customer Premise Equipment
- DASP - Data Access Service Provided
- DN - Directory Number
- ICM - Internet Call Manager
- ISDN - Integrated Services Digital Network
- ISP - Internet Service Provider
- MWI - Message Waiting Indicator

35

- PSTN - Public Switched Telecommunication Network
- SMDI - Simplified Message Desk Interface
- SS7 - Signalling System #7
- VMS - Voice Messaging Service
- 5 • VMS-SP - VMS Service Provider

An advantage of the method of the present invention is allowing data access service providers (DASP) subscribers to manage their telephone service through their
10 DASP connection. The subscriber can obtain call data information and provides real time call control.

The service in accordance with an embodiment of the present invention has the following components.

A Visual Incoming Call Indicator (VICI) informs a
15 subscriber through a popup window connected to the DASP that there is a call attempt. When available the user could be provided with the CLID and the calling name. Another version of this feature could inform the subscriber of a call attempt through Email.

20 A Visual Message Waiting Indicator (VMWI) allows a subscriber connected to the DASP to be notified of pending message on the VMS through a convenient screen display.

A Visual Call Disposition (VCD) allows the subscriber through the DASP connection to dispose of the
25 calls following a visual incoming call indication. The subscriber can optionally:

- forward the call to voice mail
- play an announcement (perhaps personalized)
- forward the call to another line
- 30 • send a text message which would be read using text to speech technology
- answer the call using voice over Internet
- terminate or park the Internet connection and take the call.

35 A method in accordance with the present invention introduces the concept of combining the Public Switched

Telephone Network (PSTN) and Data Access Service Provider (DASP) enhanced signalling and data communication capabilities to provide incoming call information and control to a DASP subscriber.

5 In the following descriptions, specific instances of the PSTN enhanced signalling capabilities are used for the purpose of describing the concept. However, those skilled in the art will recognize that the scope of this invention is not limited to these specific instances. To
10 ease description, functional call flows are used.

Brief Description Of The Drawings

The present invention will be further understood from the following description with reference to the drawings in which:

15 Fig. 1 illustrates an overview of a network in which the method in accordance with the present invention can be used;

Figs. 2 and 3 graphically illustrate the call-indication functional flow in accordance with another
20 embodiment of the present invention;

Fig. 4 graphically illustrates the call-indication functional flow in accordance with a further embodiment;

Fig. 5 graphically illustrates the message waiting indication functional flow in accordance with a further
25 embodiment of the present invention;

Fig. 6 graphically illustrates the message waiting indication functional flow in accordance with an additional embodiment of the present invention;

Fig. 7 and 8 graphically illustrate the incoming
30 call disposition functional flow in accordance with a still further embodiment of the present invention.

Detailed Description

Referring to Fig. 1 there is provided a view of the network components and interfaces required by this
35 method. The network components are grouped into four (4) domains, i.e., the PSTN domain, the DASP domain, the Voice Message Service - Service Provider (VMS-SP) domain and the

Customer Premise Equipment (CPE) domain. The PSTN domain network components are the SS7-capable telecommunication switches, labelled Service Switching Point (SST) [1, 2, 3], the Public Switched Telephone Network, labelled PSTN [5], the PSTN Gateway Agent, labelled GA [19] and the PSTN gateway, labelled PSTN-G[4]. The DASP domain network components are the DASP gateway, labelled DASP-G[7] and the DASP data network [6]. The VMS-P[11] and the VMS gateway, labelled VMS-G[12]. For conciseness, the VMS gateway [5] is shown as being part of the VMS-SP domain. However, depending on the implementation, the VMS gateway [5] component may be outside of the VMS-SP domain and be part of the PSTN domain. The CPE domain components are the caller's telephone [10], the DASP subscriber's telephone [9] and computer [8] and the CPE gateway, labelled CPE-G [18].

In Fig. 1, interfaces [9, 10, 11, 12, 13, 20], shown as direct link between network components and functions, illustrate the logical relationships between these components and functions and as such, have no implications on the physical paths, either direct or indirect, and signalling supports used in the different implementations of this invention.

The PSTN gateway (PSTN-G) [4] is the PSTN component that implements the PSTN-DASP signalling. Through interface [12], the PSTN gateway provides the DASP gateway with the incoming call indication and control for all registered subscribers [17]. Via interface [11], the PSTN gateway mediates with the other PSTN network components, including but not limited to the SSPs [1, 2, 3], the PSTN Gateway Agent [19] through interface [20] and the VMS-SP's VMS gateway [5] through interface [13], to obtain the incoming call information, the MWI information and to remotely control call establishment in the case of call disposition service, for incoming calls to subscriber [17].

The PSTN Gateway Agent (GA) [19] is the PSTN component that provides the PSTN-G [4] with the incoming call information and remote call control for incoming calls to registered subscribers [17].

5 The VMS-SP's VMS gateway's (VMS-G) [5] responsibility is to provide the PSTN gateway [4] with the MWI information for registered subscribers [17].

 The DASP gateway (DASP-G) [6] is the DASP component that implements the PSTN-DASP signalling.
10 Through interface [12], the DASP gateway obtains from the PSTN gateway [4] the incoming call indication and control for all registered subscribers [17]. The main responsibility of the DASP gateway is then to mediate, through interface [9], DASP data network [8] and interface
15 [10], with the subscriber's [17]. For call disposition service, the CPE gateway receives the subscriber's inputs from the HMI and translates the call disposition request in the appropriate message format for delivery to the DASP gateway [6].

20 The above components can be implemented in various ways. A single component can be implemented as a stand-alone network equipment, multiple components can be combined in a single network equipment or a given component can be partitioned over two (2) or more network equipments.

25 In the following sections, methods and systems are described which implement the service components of this invention, namely, call indication, MWI delivery and call disposition. However, the scope of this invention is not limited to these implementations, which are merely
30 illustrative. Finally, for each service component, a specific service scenario issued for simplicity of description only. The invention is not limited to these service scenarios.

 The following data is used in the functional
35 flows:

- caller's DN is Dnc
- caller's name is Name_c

0940EST0460

- subscriber's DN is Dns
- subscriber's Name is Name_s
- DASP gateway's DN is Dng (where applicable)
- VMS's DN is Dnv.

5

Incoming call indication

Referring to Figs. 2 and 3 there is provided a detailed functional flow for a specific implementation of the call indication service component. The following service scenario is used in the functional flow for description purposes only, the method not being limited to this service scenario:

10

- the subscriber subscribes to a VMS
- the subscriber's telephone line is busy due to a dial-up data session to the DASP.
- all calls are interswitch.

15

In this implementation of the invention, the GA[19] is implemented using the AIN call model on SSP[2]. The PSTN-G[4] component could be implemented in many ways, including but not limited to an Advanced Intelligent Network (AIN) Service Control Point (SCP) an SS7 protocol analyzer and an SS7 mediation point. The PSTN signalling capabilities used are the Signalling System #7 (SS7) Transaction Capability Application Part (TCAP) as interfaces [11], [12] and [20].

20

25

The AIN call model GA [19] at the subscriber's [17] SSP [2] is used to detect incoming calls to subscriber's DN, using, for example, the AIN Termination_Attempt trigger. It communicates with the PSTN-G[4] using the SS7-based AIN SSP-t-SCP protocol as interfaces [11] and [20]. Upon incoming call to subscriber [17], the SSP [2] AIN Termination_Attempt trigger gets fired and sends incoming call information, including the caller's [15] DN and name, to the PSTN-G[4], using, for example, the AIN Termination_Attempt message, in which case the PSTN-G[4] could answer with an Authorize_Termination

30

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message. The PSTN-G[4] can then provide the DASP-G[6] with the required incoming call indication information. The DASP G[6], through a standard data communication protocol, including but not limited to TCP/IP, HTTP and FTP,
5 communicates the information to the CPE-G[18]. This information is then formatted and displayed to the user.

The terms used are:

- TA: AIN Termination_Attempt trigger
- 10 • TA: AIN Termination_Attempt SSP-SCP message
- A_T: AIN Authorize_Termination SCP-SSP message
- IAM: SS7 ISUP Initial Address Message
- ACM: SS7 ISUP Address Complete Message
- ANM: SS7 ISUP Answer Message
- 15 • FF: SMDI Forwarded From number
- CdPN: Called Party Number parameter
- CgPN: Calling Party Number parameter
- CgName: Calling Party Name parameter
- OCN: Originally Called Number parameter
- 20 • RDI: Redirecting Indicator parameter
- RDN: last Redirecting Number parameter
- RgName: Redirecting Name parameter

Other implementations of this method to deliver the call indication service component are possible. They
25 include but are not limited to the following one..

Referring to Fig. 4 there is illustrated an embodiment of the present method. In this implementation of the invention, the GA[19] is implemented using the SSP-based [2] Call Forward Busy (CFB) telephony feature, the PSTN[4]
30 component is implemented by a PSTN SSP and the PSTN signalling capabilities used are:

- the Signalling System #7 (SS7) Integrated Services Digital Network User Park (ISUP) as interface [11] and [20]
- 35 • the Integrated Services Data Network - Basic Rate interface (ISDN-BRI) as interface [12]

- the Simplified Message Desk Interface (SMDI) for PSTN to VMS system signalling.

Terms used are:

- Setup: ISDN BRI call Setup message
- 5 • Alert: ISDN BRI Alert message
- Rel: ISDN BRI Release message
- CRn ISDN BRI Call Reference number n
- CFB: PSTN Call Forward Busy Feature
- CFD: PSTN Call Forward Don't Answer feature
- 10 • T_cfd: CFD timer

Message Waiting Indicator (MWI) delivery

Referring to Fig. 5, there is illustrated a detailed functional flow for a specific implementation of the MWI delivery service component. The following service scenario is used in the functional flow in Fig. 5 for description purposes only, the method not being limited to this service scenario:

- the subscriber subscribes to the VMS
- 20 • the subscriber's telephone line is busy due to a dial-up data session to the DASP.
- all calls are interswitch
- a message for the DASP subscriber [17] has just been left at VMS-P[14].

25 In the embodiment of the invention of Fig. 5, the VMS-G (voice messaging service gateway) [5] is implemented using the AIN call model on SSP [2]. The PSTN-G [4] component is as discussed with regard to Figs. 3 and 4. Incoming call indication, could be implemented in many ways, including but not limited to an AIN Service Control Point (SCP). The PSTN signalling capabilities used are the Signalling System #7 (SS7) Transaction Capability Application Part (TCAP) as interfaces [11], [12] and [13].

35 The AIN non-call associated capability VMS-G [5] at the subscriber's [17] DN. The PSTN-G[4] and the VMS-G[5] communicates using the SS7-based AIN SSP-to-SCP

protocol as interfaces [11] and [13]. A possibility is for the PSTN-G[4], when an incoming call has been detected using method described in regard to Figs. 2 and 3.

Incoming call indication, to start a timer set at the subscriber's [17] maximum allowed message length. At time-out, PSTN-G [4] sends an AIN non-call related Query_Request to SSP [2] requesting for status of subscriber's [17] MWI.SSP [2] answers with the AIN Query_Response with an on/off activation status code parameter. The PSTN-G[4] then provides the DASP-G [6] with the MWI information if necessary. The DASP-G [6], through a standard data communication protocol, including but not limited to TCP/IP, HTTP and FTP, communicates the information to the CPE-G [18]. This information is then formatted and displayed to the user.

The terms used are:

- Q_Req: SS7 AIN
- QUERY_REQUEST SCP-SSP message
- 20 • Q_Resp: SS7 AIN Query_Response SSP-SCP message
- P_I: AIN Provide_Info parameter
- I_P: AIN Info-Provided parameter

Other implementations of this method to delivery the MWI delivery service component are possible. They include but are not limited to the following one..

Referring to Fig. 6 there is illustrated an additional embodiment of the present invention, the VMS-G [5] component is implemented as an SMDI monitoring tool, the PSTN-G [4] component is implemented by a PSTN SSP and the PSTn signalling capabilities used are:

- the Signalling System #7 (SS7) Transaction Capability Application Part (TCAP) as interfaces [11] and [13]
- the Integrated Services Data Network - Basic Rate Interface (ISDN-BRI) as interface [12]
- 35 • the Simplified Message Desk Interface (SMDI) for PSTN to VMS system signalling.

It shall be noted here that the parameter content of the TCAP messages used on interfaces 11 and 13 are not standard but adaptation of the NT proprietary TCAP messaging used to convey the MWI information.

5

The terms used are:

- QwP: SS7 TCAP Query with Permission package type
- Info: ISDN BRI Information message
- FI: ISDN BRI Feature Identification information
- 10 element
- Incoming call disposition

Referring to Figs. 7 and 8 there is illustrated a detailed functional flow for a specific implementation of the incoming call disposition service component. The
15 following service scenario is used in the functional flow for description purposes only, the method being not limited to this service scenario:

- the subscriber's telephone line is busy due to a dial-up data session to the DASP
- 20 • all calls are interswitch
- the subscriber decides to take the call and hence, selects the Take Call call disposition option.

In this implementation of the invention, the GA [19] is implemented using the AIN call model on SSP [2].
25 The PSTN-G [4] component could be implemented in many ways, including but not limited to an Advanced Intelligent Network (AIN) Service Control Point (SCP). The PSTN signalling capabilities used are the Signalling System #7 (SS7) Transaction Capability Application Part (TCAP) as
30 interfaces [11], [12] and [20].

It shall be noticed that ALL the signalling over interfaces [12] and [9, 10] do not make reference to any existing protocol. It is provided only for sake of clarity of the whole process.

35

The terms used are:

- IAM: SS7 ISUP Initial Address Message

- TAT: AIN Termination_Attempt trigger
- T_A: AIN Termination_Attempt SSP-SCP message
- S_t-R: AIN Send_To_Resource SCP-SSP message
- C_R_E: AIN Cancel_Resource_Event SCP-SSP message
- 5 • R_C: AIN Resource_Clear SSP-SCP message
- A_T: AIN Authorize_Termination SCP-SSP message

As discussed above with regard to Figs. 2 and 3:
Incoming call indication, the AIN call model on SSP [2]
detects incoming calls to subscriber's DN using the
10 Termination_Attempt trigger. The AIN call model also
provides the remote call control capability required by the
PSTN-G to control call establishment as required by the
call disposition service component. To prevent situations
where the caller hangs up for waiting too long, the
15 subscriber [17] has a limited time windows (Call_Disposition_Timer
expires, a default treatment is provided (e.g., route to
VMS). Finally, the other options of the call disposition
service component (route to DN, route to VMS, route to
announcement, route to canned messages, ...) can be
20 implemented using the AIN Forward_Call PSTN-G[4] response
to the SSP instead of the Authorize_Termination response.

Those skilled in the art will recognize that
various modifications and changes could be made to the
invention without departing from the spirit and scope
25 thereof. It should therefor be understood that the claims
are not to be considered as being limited to the precise
embodiments set forth above, in the absence of specific
limitations directed to each embodiment.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of providing an indication of an incoming
5 call to a called station coupled to a telecommunications
network, the called station having a data processing
terminal engaged in a data call with a data communications
network, the data call being through a connection in the
telecommunications network to an access gateway for the
10 data network, the method comprising the steps of:

providing a signal advising of the incoming call
from the access gateway, over the data call connection
through the telecommunications network, to the data
processing terminal; and
15 generating by the data processing terminal,
responsive to receiving the signal, an incoming call
indication.

2. A method as claimed in claim 1, wherein the signal
20 is a message including information relating to the incoming
call.

3. A method of providing an indication of a message
waiting at a voice messaging service to a called station
25 coupled to a telecommunications network, the called station
having a data processing terminal engaged in a data call
with a data communications network, the data call being
through a connection in the telecommunications network to
an access gateway for the data network, the method
30 comprising the steps of:

providing, by the telecommunications network, an
incoming call intended for the called station to a voice
messaging service whereby the incoming call may record a
message;

35 providing a signal advising of the message waiting
from the access gateway, over the data call connection

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through the telecommunications network, to the data processing terminal; and

generating by the data processing terminal, responsive to receipt of the signal, the message waiting
5 indication.

4. A method as claimed in claim 3, wherein the signal is a message including information relating to the incoming call.

10

5. A method as claimed in claim 4, wherein the message includes information relating to the recorded message.

15

6. A method of disposing of an incoming call intended for a called station coupled to a telecommunications network, the called station having a data processing terminal engaged in a data call with a data communications network, the data call being through a connection in the
20 telecommunications network to an access gateway for the data network, the method comprising the steps of:

holding call processing of the incoming call at a switching system in the telecommunications network;

25 providing a signal advising of the incoming call from the access gateway, over the data call connection through the telecommunications network, to the data processing terminal;

30 receiving from the data processing terminal, via the access gateway, instructions for disposing of the incoming call; and

continuing the call processing of the incoming call at the switching system according to the received instructions.

35 7. A system for interconnecting a telecommunications network and a data communications network, comprising:

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10. A method as claimed in claim 8 wherein the message
indicative of an incoming call is a signalling system #7
35 message.

12. A method as claimed in claim 8 wherein the message
5 indicative of an incoming call is a call waiting
indication.

13. A method as claimed in claim 8 wherein the message
indicative of an incoming call is a voice message
10 indication.

14. A method as claimed in claim 8 wherein the step of disposing of the incoming call includes forwarding the call to voice mail.

15. A method as claimed in claim 14 wherein the step of disposing of the incoming call includes playing an announcement to the calling party.

20 16. A method as claimed in claim 14 wherein the step
of disposing of the incoming call includes forwarding the
call to another line.

17. A method as claimed in claim 14 wherein the step
25 of disposing of the incoming call includes sending a text
message.

18. A method as claimed in claim 14 wherein the step
of disposing of the incoming call includes answering the
30 call using voice over the data call.

19. A method as claimed in claim 14 wherein the step of disposing of the incoming call includes terminating the data call and accepting the incoming call.

20. A method as claimed in claim 14 wherein the step of disposing of the incoming call includes parking the data call and accepting the incoming call.

5

10

15

20

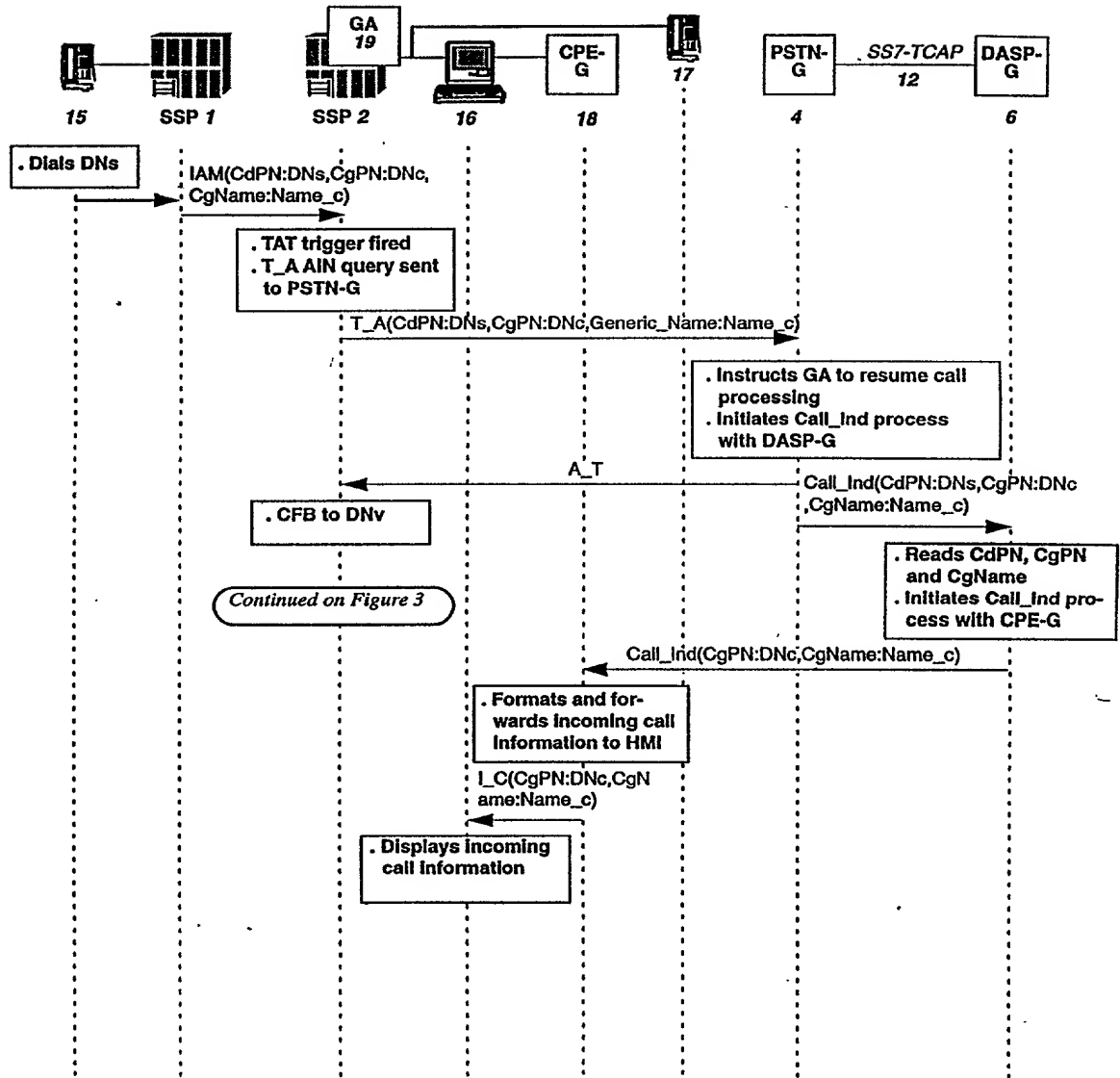


FIGURE 2

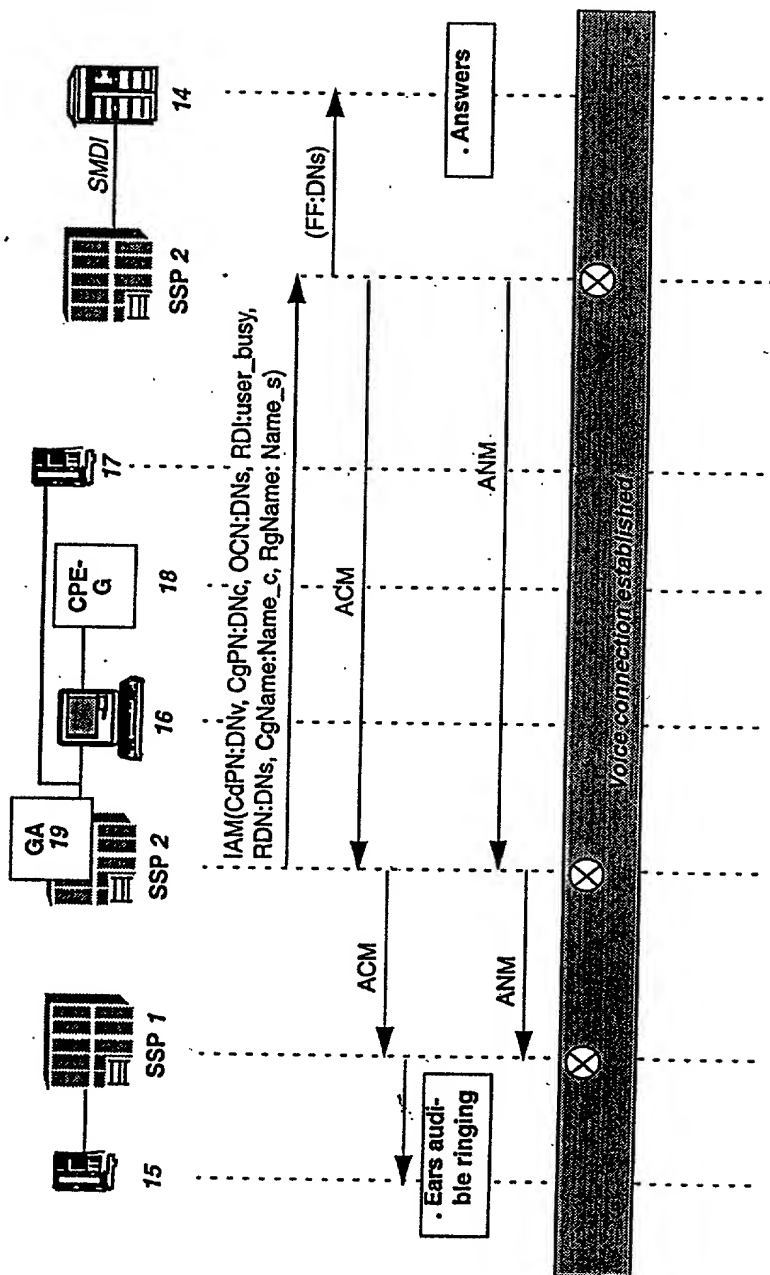


FIGURE 3

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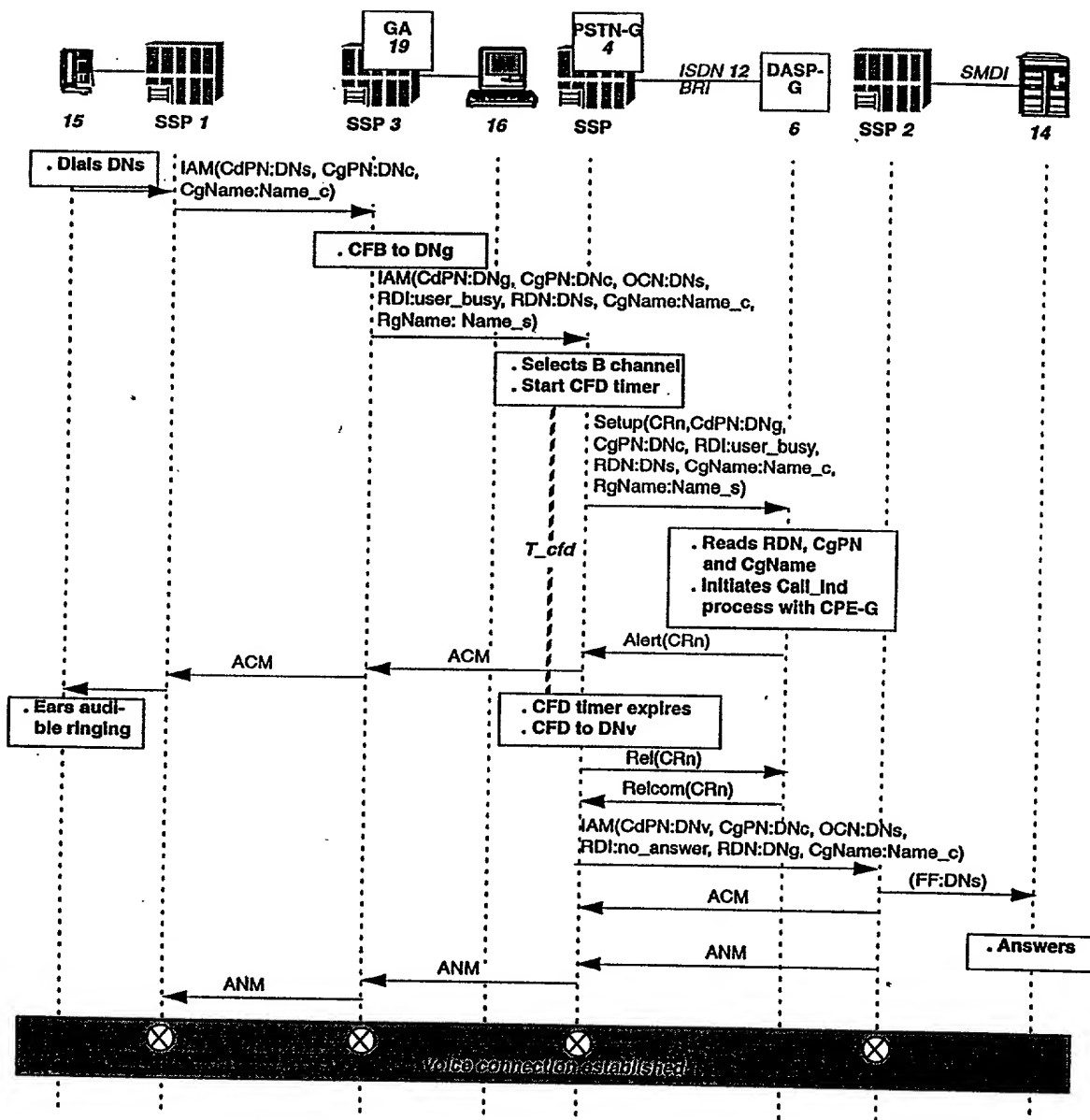
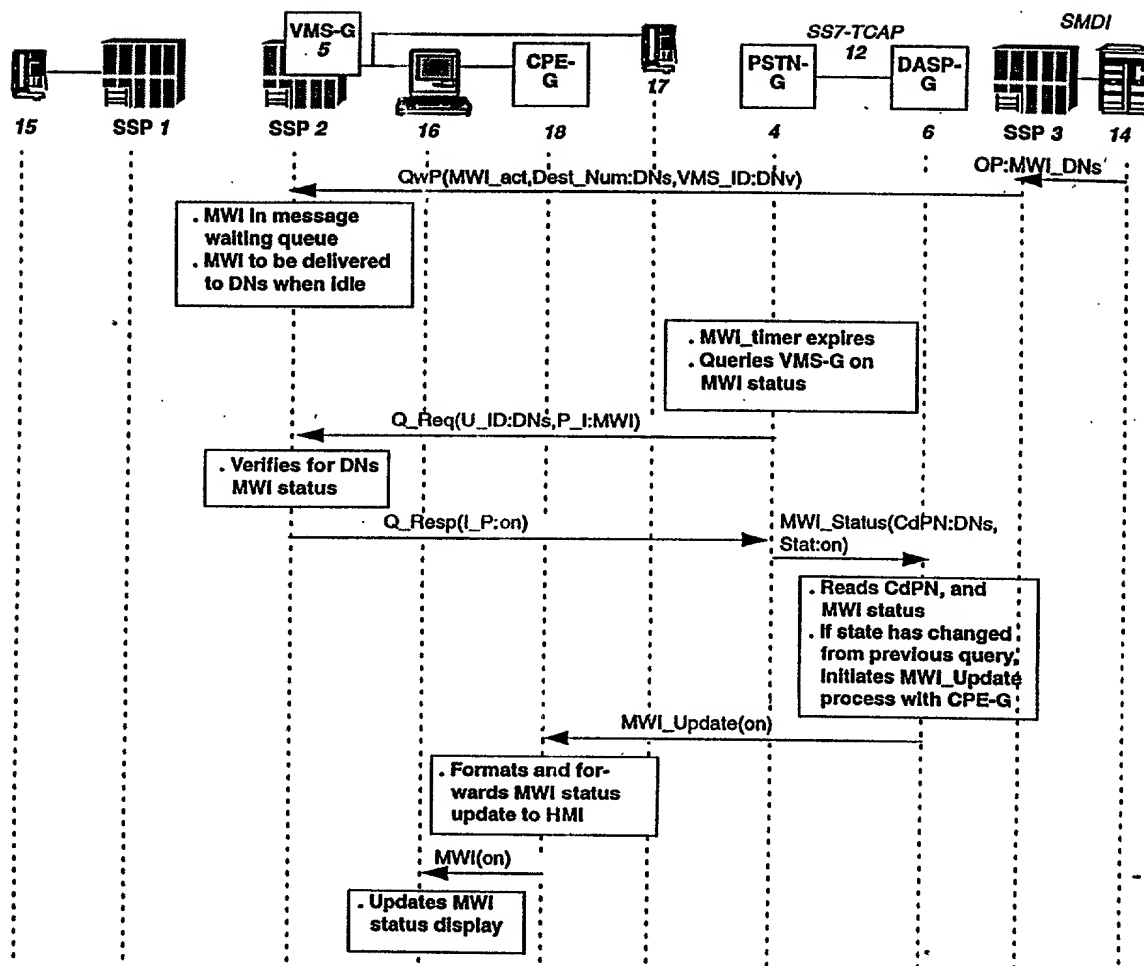


FIGURE 4



- *U_ID:* AIN User_ID parameter
- *OP:MWI* SMDI MWI activation message

FIGURE 5

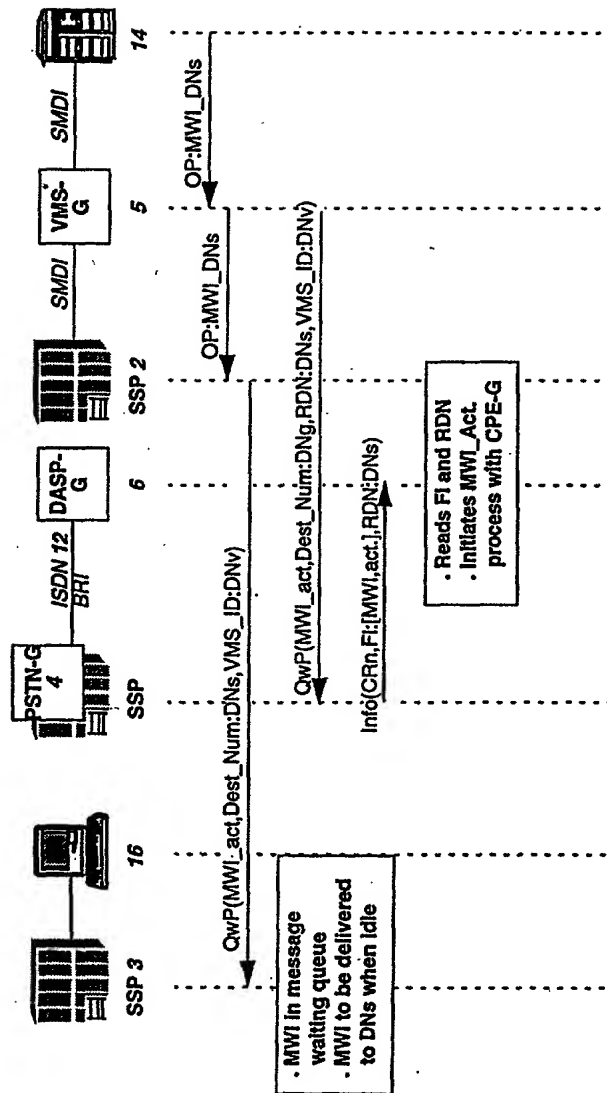


FIGURE 6

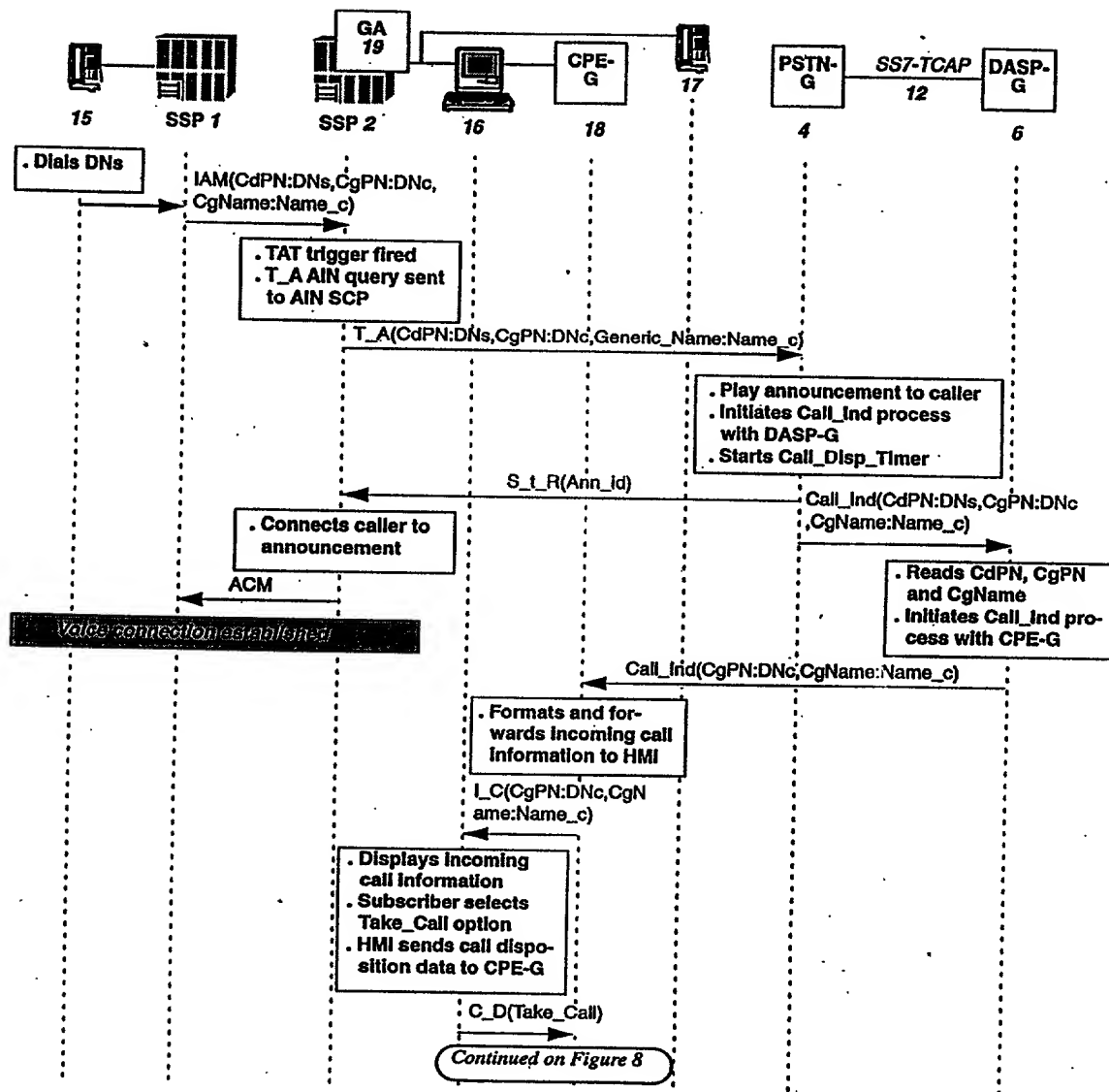


FIGURE 7

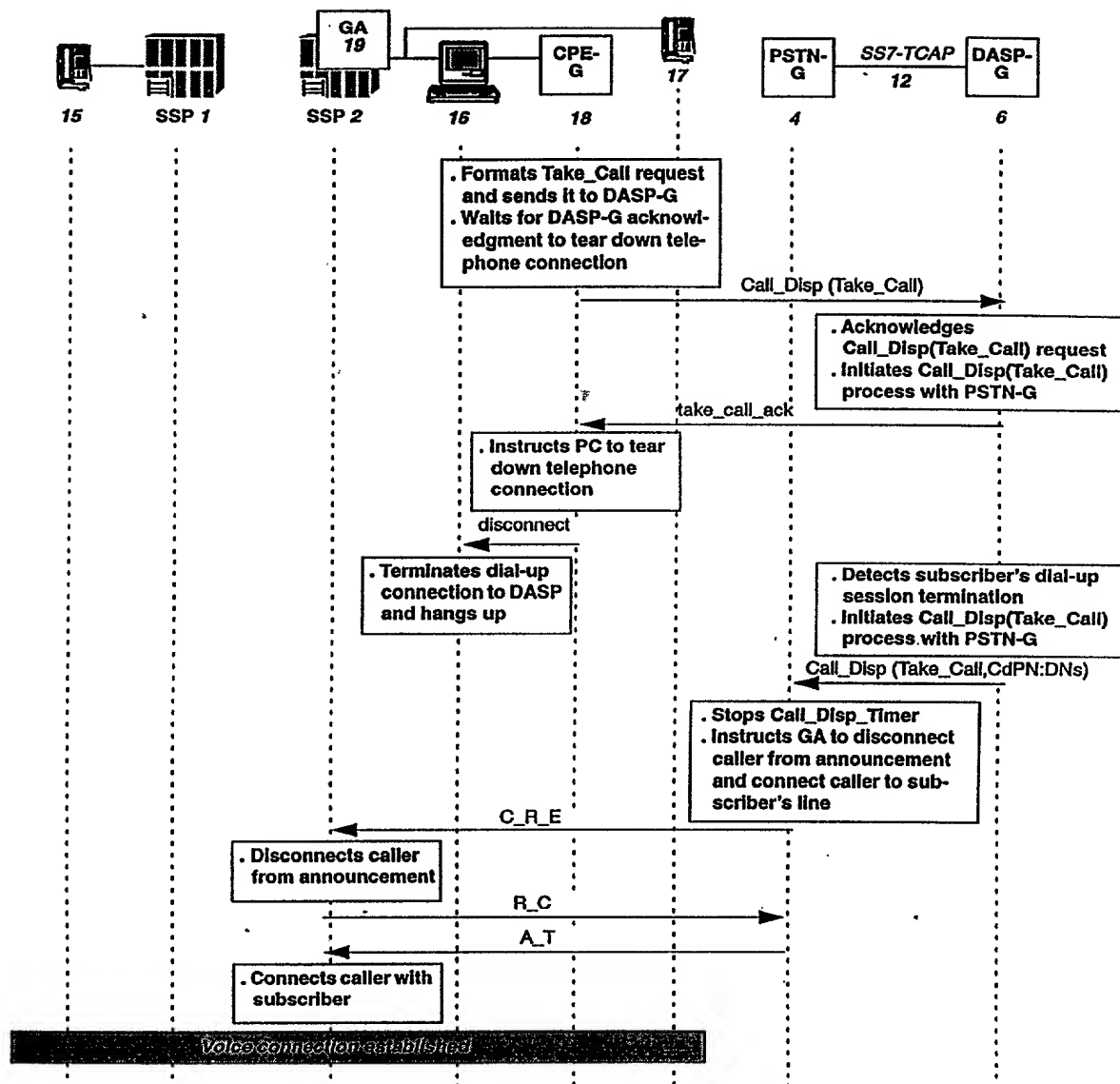


FIGURE 8

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INTERNET-BASED TELEPHONE CALL MANAGER

the specification of which is attached hereto unless the following box is checked:

☒ was filed on August 14, 1997 as United States Application Number of PCT International Application Number XXXXXXXXXXXXXXXXXXXX 08/911,036 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

NUMBER	COUNTRY	DAY/MONTH/YEAR FILED	PRIORITY CLAIMED

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

APPLICATION NO.	FILING DATE
<u>60/023,903</u>	<u>August 14, 1996</u>

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

APPLICATION SERIAL NO.	FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

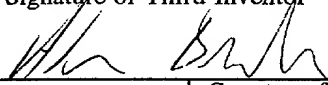
I hereby appoint as my attorneys, with full powers of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Stephen A. Bent, Reg. No. 29,768; David A. Blumenthal, Reg. No. 26,257; William T. Ellis, Reg. No. 26,874; John J. Feldhaus, Reg. No. 28,822; Patricia D. Granados, Reg. No. 33,683; John P. Isacson, Reg. No. 33,715; Donald D. Jeffery, Reg. No. 19,980; Eugene M. Lee, Reg. No. 32,039; Richard Linn, Reg. No. 25,144; Peter G. Mack, Reg. No. 26,001; Brian J. McNamara, Reg. No. 32,789; Sybil Meloy, Reg. No. 22,749; George E. Quillin, Reg. No. 32,792; Colin G. Sandercock, Reg. No. 31,298; Bernhard D. Saxe, Reg. No. 28,665; Charles F. Schill, Reg. No. 27,590; Richard L. Schwaab, Reg. No. 25,479; Arthur Schwartz, Reg. No. 22,115; Harold C. Wegner, Reg. No. 25,258.

Address all correspondence to FOLEY & LARDNER, 3000 K Street, N.W., Suite 500, P.O. Box 25696, Washington, D.C. 20007-8696. Address telephone communications to Brian J. McNamara at (202) 672-5300.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor <i>Charles MEUBUS</i>	Signature of First or Sole Inventor	Date
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Full Name of Second Inventor <i>Sylvain JODOIN</i>	Signature of Second Inventor	Date
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Post Office Address <i>10435 Parthenais, Montreal, Quebec, Canada, H2B 2L8</i>		

Full Name of Third Inventor <i>Alan BERNARDI</i>	Signature of Third Inventor 	Date <i>12/02/98</i>
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Post Office Address <i>464 Berwick, Town of Mount-Royal, Quebec, Canada, H3R 1Z9</i>		

Full Name of Fourth Inventor	Signature of Fourth Inventor	Date
Residence Address	Country of Citizenship	
Post Office Address		

Full Name of Fifth Inventor	Signature of Fifth Inventor	Date
Residence Address	Country of Citizenship	
Post Office Address		

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INTERNET-BASED TELEPHONE CALL MANAGER

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PRIOR FOREIGN APPLICATION(S)

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APPLICATION NO.	FILING DATE
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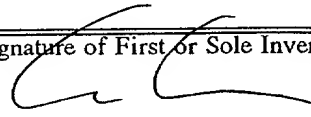
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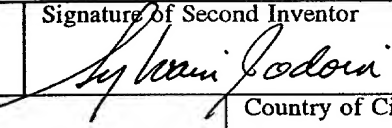
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Sole Inventor <i>Charles MEUBUS</i>	Signature of First or Sole Inventor 	Date <i>5/02/98</i>
Residence Address <i>Westmount, Canada</i>	Country of Citizenship <i>Canada</i>	
Post Office Address <i>455 Elm Avenue, Westmount, Quebec, Canada, H3Y 3H9</i>		

Full Name of Second Inventor <i>Sylvain JODOIN</i>	Signature of Second Inventor 	Date <i>5/02/98</i>
Residence Address <i>Montreal, Canada</i>	Country of Citizenship <i>Canada</i>	
Post Office Address <i>10435 Parthenais, Montreal, Quebec, Canada, H2B 2L8</i>		

Full Name of Third Inventor <i>Alan BERNARDI</i>	Signature of Third Inventor	Date
Residence Address <i>Town of Mount-Royal, Canada</i>	Country of Citizenship <i>Canada</i>	
Post Office Address <i>464 Berwick, Town of Mount-Royal, Quebec, Canada, H3R 1Z9</i>		

Full Name of Fourth Inventor	Signature of Fourth Inventor	Date
Residence Address	Country of Citizenship	
Post Office Address		

Full Name of Fifth Inventor	Signature of Fifth Inventor	Date
Residence Address	Country of Citizenship	
Post Office Address		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:)
)
MEUBUS, CHARLES, et al.)
) Group Art Unit: 2732
Serial No.: 08/911,036)
) Examiner:
Filed: August 14, 1997)
) Attorney Docket No.: 91436-123
)
For: INTERNET BASED TELEPHONE)
CALL MANAGER)

Assistant Commissioner of Patents
and Trademarks
Washington, D.C. 20231
U.S.A.

Dear Sir:

To: Assistant Commissioner of Patents
Washington D.C. 20231

Honorable Sir:

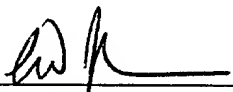
I, on behalf of the assignee of the above application, hereby revoke all former powers of attorney and appoint the following agents to prosecute the above application and to transact all business in the United States Patent and Trademark Office connected with the above application:

James D. Kokonis (Reg. No. 21,178); Nicholas H. Fyfe (Reg. No. 26,134); Robert D. Gould (Reg. No. 27,523); Thomas R. Kelly (Reg. No. 29,244); Michael E. Wheeler (Reg. No. 29,246); John E. Paxton (Reg. No. 32,389); Tokuo Hiram (Reg. No. 32,551); Hugh O'Gorman (Reg. No. 26,140); Alan R. Campbell (Reg. No. 26,129); A. David Morrow (Reg. No. 28,816); James McGraw (Reg. No. 28,168); John Bochnovic (Reg. No. 29,229); Joy D. Morrow (Reg. No. 30,911); Donald F. Phenix (Reg. No. 32,528); R. Allan Brett (Reg. No. 40,476); John R. Morrissey (Reg. No. 28,585); Gunars Gaikis (Reg. No. 32,811); Keltie R. Sim (Reg. No. 34,535); Ronald D. Faggetter (Reg. No. 33,345); Alistair G. Simpson (Reg. No. 37,040); Yoon Kang (Reg. No. 40,386); Matthew Zischka (Reg. No. 41,575); Raymond Trudeau (Reg. No. 26,412); Stephan P. Georgiev (Reg. No. 37,563); Jonathan D. Cutler (Reg. No. 40,576); Brian J. Wood (Reg. No. 26,121); William H. James (Reg. No. 36,377); J. Christopher Robinson (Reg. No. 35,772); John W. Knox (Reg. No. 35,776); Neil S. Clark (Reg. No. 37,524) and Brian G. Kingwell (Reg. No. 39,482) as principal attorneys to prosecute and to transact all business in the Patent and Trademark Office connected with the following applications:

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Northern Telecom Limited



Bill Junkin

Nov. 16/88
Date

Director - Patents

Title